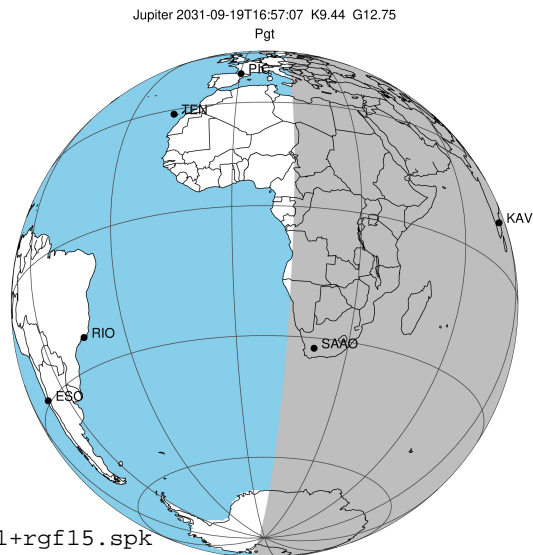


target : Jupiter
 target radius (km) : 71492.00
 C/A epoch : 2031-09-19T16:57:07.600
 Event type : Pgt
 : Jupiter occs: geocentric, topocentric
 : Not a ringed target
 Gaia source ID : 4114300978525430912
 2Mass ID (if available) : 17184009-2253198

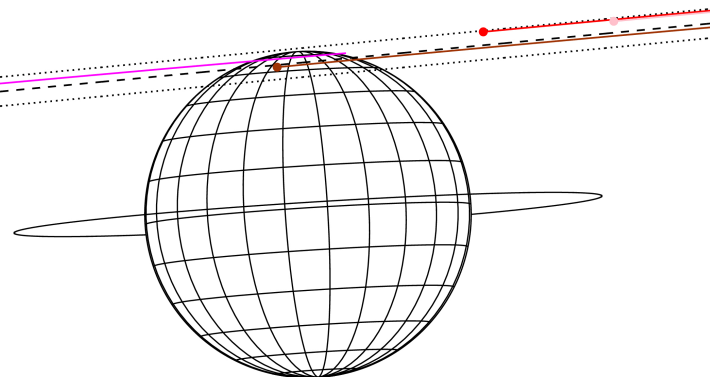
Jupiter 2031-09-19T16:57:07 K9.44 G12.75 Pgt

ICRS Star Coord at Epoch: 17h 18m 40.08823s -22:53:19.90263s
 RUWE (>1.4 is poor) : 0.89
 K magnitude : 9.435
 G magnitude : 12.746
 RP magnitude : 11.777
 BP magnitude : 13.710
 DUPflag : 0
 Distance (au) : 5.250
 f0 (km) : 0.00
 g0 (km) : 0.00
 skyplane vel. (km/s) : 15.98
 Sun-Target sep (deg) : 84.36
 Sun-Moon sep (deg) : 49.43
 B (ring opening deg) : -2.37
 PA of pole (deg) : 3.60
 Pole direction: RA (deg): 268.05684
 Dec (deg): 64.49652
 C/A sky separation (") : 17.462
 C/A sky separation (km) : 66483.6
 NAIF SPICE kernels : RAJobs_U111+rgf15.spk



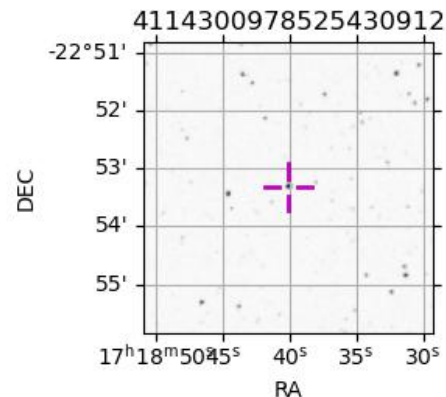
2031-09-19T16:57:07.6000 α: 17 18 40.0882 δ: -22 53 19.903 C/A ***** PA 185.48 deg v_sky +15.98 km/s D 05.25 AU
 Credit: Styled after SORA/Lucky Star

Earth
 PIC
 PMO
 TEN
 KAV
 AAT
 SAAO
 MSO



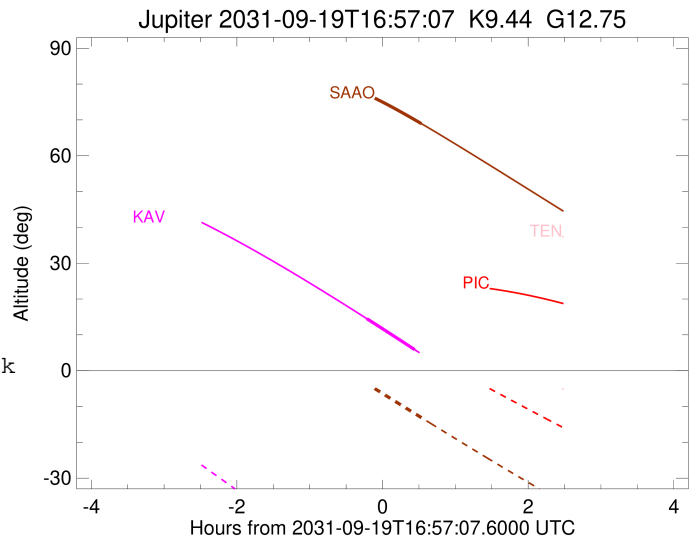
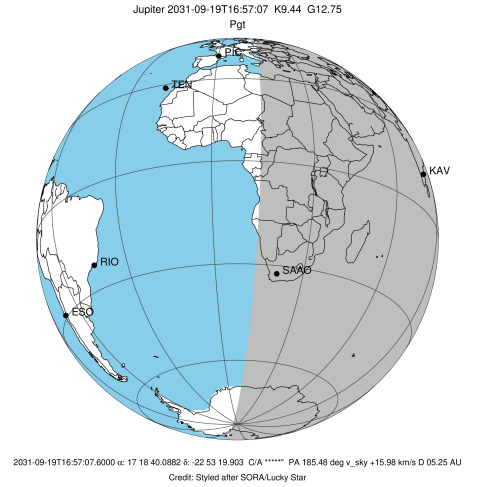
Observable events with sun below -5 deg and altitude above 5 deg

Obs	Location	lat	Elon	Target	Observed Events Interval	OCode
PIC	Pic du Midi	42.9	0.1			Pnn
PAL	Palomar Mt (200")	33.4	243.1			Pnn
PMO	Purple Mtn Obs. Nanking	32.1	118.8			Pnn
KPNO	Kitt Peak Natl Obs	32.0	248.4			Pnn
MCD	McDonald Obs. 2.7m	30.7	256.0			Pnn
TEN	Teide Obs./Tenerife	28.3	343.5			Pnn
IRTF	Mauna Kea/IRTF	19.8	204.5			Pnn
KAV	Kavalur Observatory	12.6	78.8	+ +	SEP 19 16:44 - SEP 19 17:23	Pie
RIO	Rio de Janeiro	-22.9	316.8			Pnn
ESO	European Southern Obs. (3.6m)	-29.3	289.3			Pnn
AAT	Siding Spring (AAT)	-31.3	149.1			Pnn
SAAO	So. Afr. Astro. Obs. (Sutherland)	-32.4	20.8	+ +	SEP 19 17:29 - SEP 19 17:29	Pne
MSO	Mt. Stromlo Observatory	-35.3	149.0			Pnn



```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch            : 2031-09-19T17:03:49.960
Event type          : Pgt
                    : Jupiter occs: geocentric, topocentric
                    : Not a ringed target
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 4114300978525430912
2Mass ID (if available) : 17184009-2253198
ICRS Star Coord at Epoch: 17h 18m 40.08823s -22:53:19.90263s
RUWE (>1.4 is poor) : 0.89
K magnitude         : 9.435
G magnitude         : 12.746
RP magnitude        : 11.777
BP magnitude        : 13.710
DUPflag            : 0
Distance (au)       : 5.250
f0 (km)             : 0.00
g0 (km)             : 0.00
skyplane vel. (km/s) : 15.98
Sun-Target sep (deg) : 84.36
Sun-Moon sep (deg)  : 50.14
B (ring opening deg) : -2.37
PA of pole (deg)    : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 18.124
C/A sky separation (km) : 69004.8
NAIF SPICE kernels  : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```

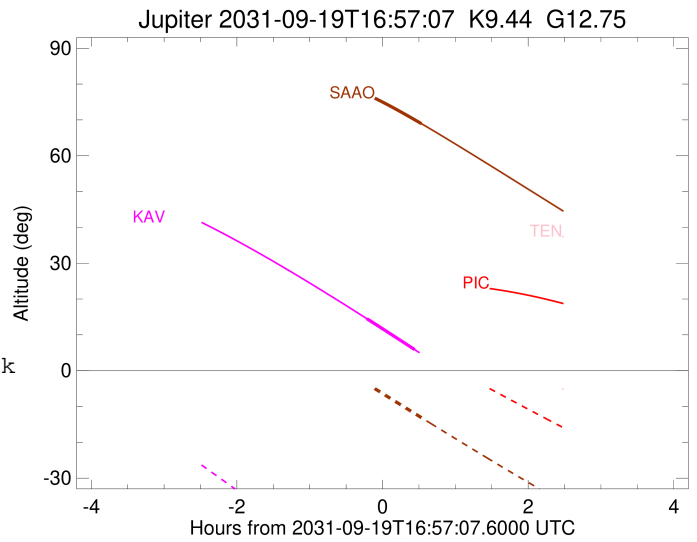
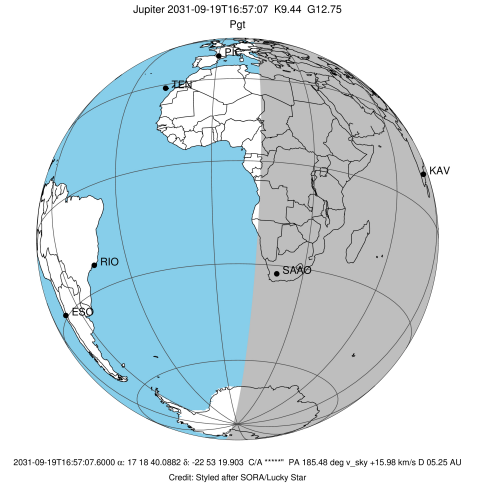


x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-19T16:44:08.427	14.53	-58.43	71485.0	73.38	75.26
Jupiter	E	2031-09-19T17:23:28.086	5.91	-66.81	71484.8	75.96	77.57

```

target                : Jupiter
target radius (km)   : 71492.00
C/A epoch             : 2031-09-19T16:58:33.790
Event type            : Pgt
: Jupiter occs: geocentric, topocentric
: Not a ringed target
Observer code         : SAAO
Location              : So. Afr. Astro. Obs. (Sutherland)
Latitude (deg)       : -32.37953
E. Longitude (deg)   : 20.81070
Altitude (km)        : 1.768
Gaia source ID       : 4114300978525430912
2Mass ID (if available) : 17184009-2253198
ICRS Star Coord at Epoch: 17h 18m 40.08823s -22:53:19.90263s
RUWE (>1.4 is poor) : 0.89
K magnitude           : 9.435
G magnitude           : 12.746
RP magnitude          : 11.777
BP magnitude          : 13.710
DUPflag              : 0
Distance (au)        : 5.250
f0 (km)               : 0.00
g0 (km)               : 0.00
skyplane vel. (km/s) : 15.98
Sun-Target sep (deg) : 84.36
Sun-Moon sep (deg)   : 50.26
B (ring opening deg) : -2.37
PA of pole (deg)     : 3.60
Pole direction: RA (deg): 268.05684
Dec (deg): 64.49652
C/A sky separation (") : 17.208
C/A sky separation (km) : 65517.5
NAIF SPICE kernels   : RAJobs_U111+rgf15.spk
URKALLv1.spk
naif0012.tls
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
jup365.bsp
urall6.bsp
IAU_SATURN_for_RINGFIT.tpc
pck00010.tpc
earth_200101_990628_predict.bpc
uranus_ringframes_rfrench20220627_v1.tf
neptune_ringframes_rfrench20220702a_v1.tf
earth_flat_IAU.spk
    
```



x: target alt < 5.0 deg or sun > -5.0 deg

Target	I/E	UTC	alt	alt-sun	radius	lat-geo	lat-geodetic
Jupiter	I	2031-09-19T16:27:56.298	79.29	-0.18x	71485.8	64.41	67.14
Jupiter	E	2031-09-19T17:29:08.695	68.95	-13.10	71485.4	68.13	70.53